



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,681	09/19/2003	Demetri Psaltis	P397-US	4072
72932	7590	09/04/2009		
Steinfl & Bruno 301 N Lake Ave Ste 810 Pasadena, CA 91101			EXAMINER LAMB, CHRISTOPHER RAY	
			ART UNIT	PAPER NUMBER
			2627	
			MAIL DATE	DELIVERY MODE
			09/04/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/664,681	<b>Applicant(s)</b> PSALTIS ET AL.	
	<b>Examiner</b> CHRISTOPHER R. LAMB	<b>Art Unit</b> 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-6,10 and 11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,10 and 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 31<sup>st</sup>, 2009 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gushko et al. (US 6,291,132) in view of Bawendi et al. (US 6,774,361), and further in view of Fuller et al. ("Ink-Jet Printed Nanoparticle Microelectromechanical Systems," Journal of Microelectromechanical Systems, Vol. 11, No. 1, February 2002, disclosed in IDS).

Regarding claim 1:

Gushko discloses:

A method of storing data comprising:

Art Unit: 2627

placing a plurality of fluorescent elements at each of a plurality of data pit locations on a rotating data storage medium to represent data (column 12, lines 35-50);

exciting said fluorescent elements at each location by making them fluoresce (column 12, line 50 to column 13, line 5);

measuring said fluorescence of said fluorescent elements at each location to identify presence and absence (column 13, line 45-65).

Gushko does not disclose:

(A) wherein said fluorescent elements are:

nanometer beads filled with nanometer sized particles, the nanometer sized particles providing colors to the nanometer beads;

where it is the colors within said beads that are excited and the presence and absence of said colors that is identified.

(B) wherein the nanometer beads are placed using inkjet technology.

Regarding (A):

Bawendi discloses:

fluorescent elements that are nanometer beads filled with nanometer sized particles (column 14, lines 15-50), the nanometer sized particles providing colors to the nanometer beads (column 6, lines 25-65);

where it is the colors within said beads that are excited and the presence and absence of said colors that is identified (e.g., column 5, lines 45-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Gushko wherein the fluorescent elements are nanometer beads

Art Unit: 2627

filled with nanometer sized particles, the nanometer sized particles providing color to the nanometer beads, as taught by Bawendi, where it is the colors within said beads that are excited and the presence and absence of said colors that is identified.

The rationale is as follows:

Both Gushko and Bawendi are directed to using fluorescent materials to record information.

Gushko discloses using fluorescent dye to record information.

Bawendi specifically discusses using fluorescent dyes to store information (column 3, lines 5-15) and discloses that quantum dots are superior (column 3, lines 5-40).

One of ordinary skill could have combined the known improvement taught by Bawendi with the disclosure of Gushko and achieved predictable results.

Regarding (B):

Gushko in view of Bawendi does not disclose wherein the nanometer beads are placed using inkjet technology.

Fuller discloses wherein nanometer beads are placed using inkjet technology (page 54: last two paragraphs).

It would have been obvious to one of ordinary skill in the art to include in Gushko in view of Bawendi wherein the nanometer beads are placed using inkjet technology.

The rationale is as follows:

Fuller demonstrates that inkjet technology is a known method for depositing nanometer beads. Fuller discloses that is advantageous (page 54).

One of ordinary skill could have combined the teaching of Fuller with that of Gushko in view of Bawendi and achieved predictable results.

Regarding claim 3:

Gushko in view of Bawendi, and further in view of Fuller, discloses:

wherein said nanometer sized particles are nanometer sized fluorescent particles (taught by Bawendi as discussed above).

Regarding claim 4:

Gushko in view of Bawendi, and further in view of Fuller, discloses:

wherein said nanometer sized particles comprise quantum dots (taught by Bawendi as discussed above).

Regarding claim 5:

Gushko in view of Bawendi, and further in view of Fuller, does not explicitly disclose:

wherein said quantum dots are made up of red, blue, and green color.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in Gushko in view of Bawendi, and further in view of Fuller, wherein said quantum dots are made up of red, blue, and green colors.

The rationale is as follows:

Bawendi teaches that the quantum dots are made up of multiple colors (each “discrete emission” of column 6, lines 45-55 is a separate color).

There is a finite set of colors, of which red, blue and green are prominent examples. One of ordinary skill could have pursued the known potential solutions and chosen red, blue, and green with a reasonable expectation of success.

Regarding claim 6:

Gushko in view of Bawendi, and further in view of Fuller, discloses:

wherein said quantum dots are made of a plurality of shades of a color (column 6, lines 45-55: if there may be twenty separate discrete emissions at least some must be a plurality of shades of a color, since there are less than twenty major colors).

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gushko in view of Bawendi, and further in view of Fuller, as applied to claim 1 above, and further in view of Metz (US 5,166,813).

Regarding claim 10:

Gushko in view of Bawendi, and further in view of Fuller, discloses a method for storing data as discussed above in the rejection of claim 1.

Gushko in view of Bawendi, and further in view of Fuller, does not disclose “wherein a HSMF is used for dispersing collimated fluorescent light on a spectrally sensitive component.”

Metz discloses that when detecting fluorescence, a holographic multi-spectral filter is used for dispersing collimated fluorescent light on a spectrally sensitive component (the abstract discloses the use of a holographic filter; Fig. 1 depicts the light impacting the spectrally sensitive component; column 12, lines 40-50 discloses that the

Art Unit: 2627

hologram can be multi-spectral: that is, it transmits more than one wavelength). Metz discloses that a holographic filter is more efficient (column 13, lines 1-15).

It would have been obvious to one of ordinary skill at the time of the invention to include in Gushko in view of Bawendi, and further in view of Fuller a holographic multi-spectral filter as taught by Metz.

The combination would have been predictable to one of ordinary skill in the art; the motivation would have been to be more efficient.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gushko in view of Bawendi, and further in view of Wenzel ("Shaping nanoparticles and their optical spectra with photons," Applied Physics B, pages 513-517, October 20<sup>th</sup>, 1999; cited in applicant's specification).

Regarding claim 11:

This claim is identical to claim 1 except that the nanometer beads are placed "using laser-induced technology."

As above, the base reference Gushko does not teach the nanometer beads or the means of placing them.

The nanometer beads are taught by Bawendi; the analysis was discussed in detail in the rejection of claim 1.

Regarding the means of placing the beads:

Gushko in view of Bawendi does not disclose wherein they are placed "using laser-induced technology."



Wenzel discloses using laser-induced technology to place quantum dots (e.g., Conclusions, page 516).

It would have been obvious to one of ordinary skill in the art to include in Gushko in view of Bawendi wherein the nanometer beads are placed using laser-induced technology.

The rationale is as follows:

Wenzel teaches a known technique to place nanoparticles.

One of ordinary skill in the art could have combined it with the teaching of Gushko and Bawendi and achieved predictable results.

### ***Response to Arguments***

6. Applicant's arguments filed July 31<sup>st</sup>, 2009 have been fully considered.

With regards to the rejections of claim 8:

Since this claim has been cancelled the rejections are moot.

With regards to the 35 USC 112, first paragraph rejection of all claims:

Applicant's detailed arguments and the prior art provided by applicant in the IDS of July 31<sup>st</sup>, 2009 have been considered and are persuasive. The 35 USC 112, first paragraph rejection has been withdrawn.

With regards to the 103 rejections in view of McGrew over Nakajima:

Applicant's arguments with respect to these rejections are moot due to the new grounds of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER R. LAMB whose telephone number is (571)272-5264. The examiner can normally be reached on 9:00 AM to 5:30 PM Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher R Lamb/  
Examiner, Art Unit 2627